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ABSTRACT

Based on research conducted by Southwest Virginia Community College, this monograph presents information in a variety of formats on seven computerized career information systems: (1) microcomputers, which have the advantage of low cost, amenability to the production of locally generated databases, and portability; (2) the Coordinated Occupational Information Network (COIN); (3) the Computerized Vocational Information System (CVIS); (4) the DISCOVER II program for microcomputers; (5) the Computerized Educational and Career Information Link (CECIL); (6) the Guidance Information System (GIS); and (7) the System for Interactive Guidance and Information (SIGI). In addition to individual descriptions of each system, a chart is provided, which compares these systems with respect to what kinds of information are included; cost of the software and hardware; how the system groups occupations (e.g., by values, interest, Dictionary of Occupational Title numbers, or Holland Codes); the number of occupations listed in the system; and how often the system is updated. Two additional articles are also included: Vince Landau's description of how Kansas Wesleyan College uses a microcomputer in listing teacher vacancies, career planning, computer-assisted instruction, and providing career information; and Sue Captain's discussion of the advantages of housing a Career Information Center in the college library. (AYC)

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Exploration of Career Information Delivery Systems Via Computerization

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Southwest Virginia Community College
Richlands, Virginia

JC 810340

RICHLANDS NEWS-PRESS, Wednesday, March 25, 1981 - 3 B

Landau makes presentation

Computer possible

Vince Landau, director of Career Planning and Placement at Kansas Wesleyan University, met with Southwest Virginia Community College staff and other local school and college personnel for a series of three presentations March 12 and 13, to explain and demonstrate computer possibilities in career information.

SVCC, along with Wytheville Community College and other local schools and agencies, is exploring the possibilities of using microcomputers with the present Career Information System currently being utilized by the college. SVCC was one of the original four pilot colleges used to test and provide input into the development of Appalachian Educational Laboratory Career Information System, which is now used by colleges, universities and public schools all over the United States and overseas.

With the addition of computerization to the present Career Information System, occupational career information can be extended to more people, more efficiently and in a more up-to-date and interesting format. SVCC has been able to explore computer possibilities through a planning grant with a Virginia Vocational Guidance Programs Grant awarded for the 1980-81 year.

The publication of this material was made possible through funds from Improving Vocational Guidance and Counseling Project, number VA-81-6-134-1-GD-001

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The planning grant gave us the opportunity to explore the possibility of computerizing SVCC's career information system. Several methods of exploration were used and seven different systems were explored.

A search of the literature found that very little has been written on the microcomputer, and futher exploration found that much is now being done with microprocessors but will not be marketable until next year. Using this focus, we explored both microcomputer systems and full scale on-line computer systems; and during our exploration process we used consultants, limited travel, convention visits, and telephone calls as a means of compiling information on the various computer systems. We think that we explored all microsystems that are now available and the major on-line computer systems. We found that many states are in the process or already have state-wide career information systems.

The purpose of this publication is to make available information about career computerization that we spent nine months "digging out" a little at a time. The booklet is not restricted to one writing style; instead, a number of people associated with the project contributed using various approaches and frames of reference.

A number of "spin-offs" for 1981-1982 have resulted from this planning project if funding is available. We have decided " to go with" the Radio Shack Model III microcomputer and develop our own software. This decision was based on cost and availability of the micro computer versus the expense of packages and the lack of an on-line computer system. In addition, the library is proposing an

outreach program with community libraries using the COIN system with the goal of serving adults, those who increasingly are making mid-life career changes.

I would like to thank all the people associated with this project. We have touched a number of individuals and think that it has been a worthwhile endeavor.

Rod Moore
Southwest Virginia Community College

COMPUTER PROJECT

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Jerry Thornhill - SVCC

Linda Moore - SVCC

Armand Opitz

CAREER INFORMATION:
THE FUTURE AND MICROCOMPUTERS

S.V.C.C. became interested in microcomputers as a possible way to provide low cost, efficient access to career information. The college library houses the Appalachian Educational Lab (AEL)'s worker traits based information system. The AEL program is also used as a basis for the career decision-making course offered by the Student Services Staff at SVCC.

Several nationally known on-line computer-based career information systems have been available (and are discussed in other articles in this publication). However, the costs of the terminal installation, proprietary software, and telephone line transmission precluded any possible investment by our small, rural institution.

The advent of the micro-computer and its use in business and industry suggested that it might be a low-cost solution to SVCC's provision of access to career information. The micro-computer "revolution" promises the possibility of every family having its own home microcomputer and every college and high school, no matter how small or rural, being able to provide access to career information on a personal basis.

It is possible to have a complete micro-computer unit, with "floppy disk" storage and both visual screen and printer capacity for under $5,000. If one wishes to "personalize" career information for the region he/she serves and have a command of basic language, he/she can develop localized "software" to supplement

general software programs which may be available.

In fact, Radio Shack and Apple, only two of the leading micro-computer manufacturers, will provide training, instructional guides, and other support service to assist one in developing a "localized" information system.

Of even greater interest is the possibility that a college or technical school can collaborate with area high schools, public libraries, or other agencies to provide a broader, more accurate local information system to supplement the general career information already available.

One strength of a micro-computer based information system is its portability. It can be set up at major events, such as career days, to provide instant access for large numbers of people at one time. Do recognize, however, that a micro-computer based system will really require the "hard copy" back-up career information files and other materials such as the Dictionary Occupational Titles, Occupational Outlook Handbook, and college catalogs, so that more extensive work can be done by the system user interested in greater in-depth information.

COMPARISON CHART

	COIN	CVIS	CECIL	DISCOVER	GIS	SIGI	MICRO
1. The system includes:							
A. Decision Making				X		X	
B. Occupational Information	X	X	X	X	X	X	X
C. College Information	X	X	X	X	X	X	X
D. Values Exercises				X		X	X
E. Interest Inventory	X			X			
F. Listing of Colleges, Vocational-Technical Schools				X	X	X	
G. Financial Aid	X	X		X	X		X
H. Military Information	X			X	X		
2. The cost of the program (software)							
Under $1,000			X				X
Under $10,000	X	X				X	
Under $30,000				X	X		
3. The cost of the hardware is:							
Under $5,000	X						X
Under $100,000		X	X		X	X	
Under $200,000				X			
4. The system can group occupations according to:							
Values	X			X	X	X	X
Interests	X			X	X	X	X
D.O.T. numbers							
Holland Codes	X	X	X	X			
5. The system has the following number of occupations							
300	X					X	X
500				X			
1000					X		
6. The system is updated							
Annually	X	X	X	X		X	X
Biennially					X		

The Coordinated Occupational Information Network (COIN) has been developed by Dr. Rod Durgin, who also guided the development of the statewide occupational information system in Michigan in the mid-70's. A PhD from Ohio State University, Dr. Durgin has developed his competence in occupational information systems through experience as a state director of occupational information, a college professor in occupational counseling and guidance at Southern Methodist University and Ohio State University, and as a consultant to education and government in the field of occupational information and guidance.

COIN is a complete and comprehensive career information system which delivers in-depth information on over 1450 jobs through six annually revised files:

Occupational File - describes major occupations and their specialties. Each occupational description has information on:

Nature and Duties of Occupation
Worker Conditions
Worker Requirements
Tools, Equipment & Materials used
Wages and Fringe Benefits
Employment Opportunities
Advancement Opportunities
Job Outlook and Methods of Entry
Education/Training Requirements
Sources of Additional Information

Schools Subjects File - A broad, cross-reference file relating all common high school subjects useful in career preparation to specific COIN occupations. Essential for career infusion in the classroom. Used constantly by counselors and teachers.

College Major File - descriptions of related post-secondary education and training programs. Information on the purpose, basic courses, typical entrance requirements, and the names of all the specific schools offering each program is presented.

School File - descriptions of two-year and four-year public and private universities and colleges. COIN has data on the type, size,and location of school, cost, admission requirements, calendar system, financial aid and all majors offered by each school.

Apprenticeship File - descriptions of national apprenticeship training programs related to COIN occupations. How to apply, state and Federal contact agencies, program content and length, including what is learned in the classroom and on the job, are all provided.

Military File - descriptions of military occupations and training opportunities which relate to COIN's civilian occupations. Questions on branch of service, military job titles and rating numbers, and duties are all answered.

The COIN program is available in two different, but compatible, formats. Either format will encourage users to explore occupational possibilities. An agency may choose microfiche format, interactive computer format, or both. Either system offers the same information to users of COIN.

Microfiche Format: With the microfiche, a user can answer questions about an occupation or its training programs in seconds by referring to any of the six information files. The appropriate microfiche is located simply and inserted in the reader or reader/printer. The user has instant access to seven pages of information on each occupation but also to specific information on related education and training requirements.

A new microprocessor software program has been developed to enhance the capabilities on the microfiche format. Currently available for use of the TRS 80 Model 1, Level 2 and the TRS 80 Model III, this program will soon be available for the APPLE II PLUS Computer. With the microprocessor enhancement, users are able to sort and search electronically for Occupations and Colleges which satisfy specific user criteria. When the occupation or college has been identified, the user is referred to the appropriate microfiche location for a detailed description.

Computer Format: Access is gained to the computer system by means of telephone lines. The typewriter-like terminal is connected to the computer by dialing an assigned phone number, and typing in a code word. The computer then asks a series of multiple-choice or yes-no questions; the user responds with personal choices, usually requiring a single key-stroke. In a few moments, all the information requested by the user is printed out to study and discuss at leisure.

The COIN computer program has internal programming features that make the system usuable by the consumer - students, CETA clients, rehabilitation users - without specialized training. No complicated

coding is required. The COIN computer program has been developed with a 'transparent data base,' which allows users to shift from file to file without constant recording or coding. In addition, once a user selects a particular occupation to explore, all information presented from then on (regardless of which file the information is in) will relate to that specific occupation, until a different occupation is selected.

The COIN computerized College Search program provides the user with a list of two-and four-year schools that match the variables most commonly used by individuals when selecting a college or university. The computer provides a summary of general information, admission requirements, financial aid, housing, and curriculum information for over 3000 schools nationwide.

All of COIN's computerized data files are segmented. This means the user may select only the data important to him/her. Thus a user can go into the details of 'employment, outlook, and earnings' of a job, or just explore the 'nature' of the job without all the detail that may be crucial to someone else. The easy-to-use multiple choice and yes-no questions allow the user to specify the particular data desired. Most responses require only single key strokes by the user, reducing the chances of error.

The COIN Computerized Guidance System and the COIN Microfiche System both use the same index. In addition, the computerized system is cross-referenced to the microfiche data base, and vice versa. Also, COIN has been thoroughly cross-referenced with the Worker Trait Group Index developed by the Appalachia Educational

Laboratory and published by McKnight Publishing Company. In this way, maximum efficiency in usage can be guaranteed.

The COIN computerized system permits addition of local wages, local outlook, and local training program data. This can be updated on-line as required. The COIN computer program automatically integrates this local data with the national data. Locally gathered information can also be integrated into the COIN Microfiche system.

COIN is comprehensive, easy to use, flexible, and the most cost-effective of all career information systems. COIN is a welcome addition to any guidance or counseling effort.

Linda Moore

COMPUTERIZED VOCATIONAL INFORMATION SYSTEMS (CVIS)

Hampton City Schools
Hampton, VA

Hampton City Schools has implemented CVIS in five high schools to assist students to use a computer system as an information retreival system; assist them with educational awareness as it relates to appropriate secondary and postsecondary programs which are relevant to their career interests and to their academic abilities and record; assist them with career awareness as it relates to their interests and academic record; allow students to practice decision-making.

The purchased CVIS program was in IBM language and was rewritten into a COBOL common language by Hampton's data processing team assigned to CVIS.

Five sections of CVIS were revised for local adaptation; these consisted of:

apprenticeships section
community colleges section
employment after high school and local jobs section
trade and technical schools section
financial aid

Persons responsible for the revision process were members of Hampton City Schools' Guidance Department.

Mr. Frank Hendrick, Career Education Counselor at Hampton City Schools, met with me on Wednesday, April 29. He is a member of the CVIC Board of Directors so he was able to share some extra

information, such as, the combining of APPLE/MC/CVIS (the micro-version-of CVIS) due to be marketed by October, 1981. At this point, he was speaking in terms of $495 for the micro-software package.

Verbatim from Advertising Literature

DISCOVER II FOR MICROCOMPUTERS

DISCOVER II is a computer-based career guidance and information system modeled after the original DISCOVER in content and career development process. The data files and search strategies are similar to those in the original system.

DISCOVER II runs on a variety of micro- and mini-computers which will support up to 128 concurrent users, depending upon the hardware configuration employed at your site. The cathode ray tube terminal is replaced by a color television monitor. This device will handle both text and pictures. DISCOVER II utilizes the powerful capability of color and graphics. Instructional and simulation material has been greatly reduced. Some additional access strategies to occupations have been added. DISCOVER II will be enhanced by the addition of a videodisc player and videodisc displaying pictures of work tasks and work settings of more than 400 occupations and of the campuses of four-year colleges and universities. This option will become available incrementally over the next three years.

DISCOVER II contains four distinct sections:

SELF-INFORMATION

Assessment of Interests

This module contains the on-line administration of the ninety-item Uniact IV ((C), American College Testing Program, 1978). When the user completes all items, the computer scores the instrument and interprets it in two ways: recommended regions on the World of Work Map and a Holland Code. A list of occupations

for exploration is provided for each interpretation.

Assessment of Aptitudes

Users evaluate themselves on a 1-5 scale in several aptitude areas which relate to job performance. These areas include Verbal Reasoning, Numerical Ability, Mechanical Reasoning, Abstract Reasoning, and Clerical Speed and Accuracy. DISCOVER II identifies and lists occupations which require the user-selected ranges and combinations of aptitudes.

Assessment of Work Values

Users take Super's Work Values Scale ((C), Work Importance Study, 1980) on-line. DISCOVER II lists occupations which relate to values identified by the user as having high importance.

Summary of Self-Information

If more than one module has been completed, the system provides a summary of self-information and of the occupations related to it.

STRATEGIES FOR IDENTIFYING OCCUPATIONS

Interests

If the user has taken Uniact IV, the computer reviews the scores and provides a list of related occupations. The user may also enter socres from this inventory and others--such as the Self-Directed Search, Ohio Vocational Interest Survey, the Strong-Campbell, and the Kuder--DISCOVER II will identify appropriate occupations.

Aptitudes

The user enters percentile scores from off-line administration of the Differential Aptitude Tests, the General Aptitude Test Battery, the Armed Services Vocational Aptitude Battery, or the Career Planning Program (ACT). Using scale scores from any of these instruments, the computer identifies occupations for which the user appears to have aptitude.

Work Values

By brief self-assessment of Super's work values, the user receives a list of occupations which have potential to fulfill the selected values. If the user has taken the instrument in Section I, the system recalls and reviews these selected values and provides an appropriate list of occupations.

Occupational Characteristics

This search allows the development of a list of occupations by any combination of 10-15 occupational characteristics, including salary level, educational entry level, types of work environment, amount of travel, and amount of pressure on the job.

Majors and Programs of Study

This strategy allows a user to select either a two-or four-year college major or a high school subject matter area. The computer then identifies related occupations.

Summary

If more than one strategy has been used to identify occupations, a summary will be provided which lists all occupationa and the search variables which produced them. The user can then find

those occupations which meet more than one set of self- or environmental variables. The system also allows the user to enter the code number of specific occupations and find out why they have not appeared as a result of search strategies.

OCCUPATIONAL INFORMATION

Browse Mode

This module teaches the World of Work Map ((C), American College Testing Program, 1978), utilizing the full color and graphic capability of the system. The user may then browse occupations by the World of Work concepts: dimensions (data, people, things, ideas, and combinations thereof) and job families. Lists of occupations in each dimension or job family are provided, along with short descriptions of each occupation.

Detailed Mode

The user can select any of twenty-one possible questions about each occupation on his/her accumulated list and receive an answer. Pictures of work tasks and environments will be added on a videodisc which will be triggered automatically by the computer.

SEARCHES FOR EDUCATIONAL INSTITUTIONS AND JOBS

Four-year College Search

This module allows the user to enter a combination of variables desired (location, size, cost, major fields, admission selectivity, etc.) and identify four-year colleges which have these characteristics.

Displays of information about each college are also available. At a later time videodiscs which show campuses and unique features of colleges can be added to the system.

Two-year College Search

Users seach a file of two-year institutions in their state to identify those which have desired characteristics.

Technical/Specialized Schools Search

This module assists users to identify proprietary schools within their state which have desired curricula.

Job Bank

This module assists users to identify entry-level positions which are available or local employers which typically have job openings. Use of this strategy requires that each local site develop a local job data file.

System-Wide Functions

The DISCOVER II system has the following system-wide capabilities: (1) storage of a unique user record which keeps track of past uses of the system; (2) ability to print any display at user's discretion; (3) ability to "back up" as many as three displays, including the "erasing" of variables already selected; (4) ability to exit from any display and sign off or branch to another part of the system; (5) an author language to allow the modification or addition of material at the local level.

DISCOVER PRICE LIST

For IBM 370 or 4300 Series

Initial Lease Price: $1000 per month for 24 months, after which the customer has perpetual right to use the product.

Annual Maintenance, Royalty, and Data File Update Fee: $2,000 per year

For the Hewlett-Packard 3000 Series III

Initial Lease Price: $10,000 for the first year

Annual Maintenance, Royalty, and Data File Update Fee: $4,000

For the IBM Series I, several models of the DEC PDP 11, and Data General Eclipse Mini-Computers.

Initial Lease Price: $15,000 for the first year

Annual Maintenance, Royalty, and Data File Update Fee: $3,000 per year

For a range of micro-computers

Hardware (microprocessor, terminal, floppy discs)...	not more than $8,500 in quantity of one
Hardware (microprocessor, terminal, hard discs).....	not more than $10,500 in quantity of one
DISCOVER II Software (First copy).....	$1,500
(additional copies).....	$800
Annual Maintenance, Royalty, and Data Update Fee.....	$500
Videodisc Player (DVA 7820-2).....	$2,200 in quantity of one

Linda Moore

COMPUTERIZED EDUCATIONAL AND CAREER INFORMATION LINK (CECIL)

VPI & SU has modified the Computerized Vocational Information System (CVIS) to create CECIL (computerized Educational and Career Information Link). From a menu, the student chooses to research one of these areas:

occupational data

technical programs

graduate programs

After a choice is made from the menu, the student further selects a method of research:

1. direct - decided about a specific occupation and enters appropriate key numbers
2. middle - student has completed the Holland's personality style and has a type; (realistic, intellectual, social, conventional, enterprising, artistic)
3. indirect - student has not completed Holland's, but reads description of styles and chooses that which best suits him.

Dale Furbish

FACTSHEET

Roanoke Valley
Career Education Consortium

PURPOSE: The Roanoke Valley Career Education Consortium was established in 1976 in order to coordinate the dissemination of occupational and career information to its members.

ACTIVE MEMBERSHIP: Roanoke County Public Schoos, Roanoke City Public Schools, Botetourt County Public Schools, New River Community College, Dabney S. Lancaster Community College, Virginia Western Community College, Hollins College, Roanoke College, 5th District Manpower Consortium (CETA)

CURRENT SERVICES: Guidance Information System (GIS), Local Labor Market Survey (JOBS)

METHOD: Each active member has one or more on site remote computer terminal(s). By calling the VWCC computer users establish contact that permits them unlimited access to the GIS and JOBS computer programs. The GIS contains information about Occupations, Two-Year Colleges, Four-Year Colleges, Graduate Schools, the Armed Services and Financial Aid. JOBS contains information about the employment profile of over 190 Roanoke area employers, which results in over 1500 separate entries.

COSTS: Each member contributes to the operation of the RVCEC in proportion to the number of terminals it operates. Individual members are also responsible for procurring its own terminals, acoustic couples, telephone costs, terminal supplies and for upkeep on its own equipment.

EXPANSION PLANS: Efforts are underway to increase the number of employers surveyed by JOBS to 450, while the feasibility of adding special files to the GIS which deal with the handicapped and with CETA services is being studied.

CONTACT PERSONNEL: Dr. Harry C. Nickens
Dr. Dale S. Furbish
Virginia Western Community College
3095 Colonial Avenue S.W.
Roanoke, VA 24015
(703) 982-7237

System of Interactive guidance and Information (SIGI)

The SIGI is at Lynchburg College and connects to Tri-College Computer Center. Lynchburg College schedules students in blocks of 1 1/2 hour each for 3 sessions.

SIGI includes six systems that you can use in making career decisions:

SYSTEM	WHAT STUDENT DOES	STEP IN DECISION-MAKING PROCESS
(1) Values	Examines 10 occupational values & weights the importances of each	Find out what you want
(2) locate	Puts in specifications 5 values at a time and gets lists of occupations that meet the specifications.	Find out where you can get what you want.
(3) Compare	Asks questions and get specific information about occupations of interest	Get information for judging the advantages and disadvantages of your options. Narrow down your list of options.
(4) Prediction	Finds out probabilities of getting various grades in key courses of programs that prepare for occupations.	Assess the probabilities of success for each option.
(5) Planning	Sees the steps to be taken to prepare for an occupation, including the program at the local college.	Plan a course of action for each option.
(6) Strategy	Evaluates occupations in terms of the rewards they offer and the risks of trying to enter them.	Apply a rational decision-making strategy to occupation choice.

Occupational Values:

money

prestige

independence

helping others

security

variety

leadership

work in your main field of interest:

(personal contact, scientific, technological, verbal, aesthetic, administrative)

leisure time

early entry (how much time are you willing to give to education?)

Vince Landau

STEPS IN THE DEVELOPMENT OF THE COMPUTER-ASSISTED PLANNING PROGRAM AT KANSAS WESLEYAN COLLEGE

PROGRAM CONCEPTION

The concept of a computer-assisted planning program happened one afternoon when a salesman from McKinght Publishing stopped by the career center with a new program from Appalachia Educational Lab called "Career Planning and Decision-Making for College."

After he left, I began examining the materials, and realized that unit two of the book could be very efficiently put into a microcomputer system that would read in the data used in that unit, using the students reaction to form the basis of a career plan.

Step one of the total developmental process was to convince the administration that a microcomputer system was cost-justified. Since one of the office secretaries was leaving, we found a ready-made source of money, provided that the computer could replace all or part of the work being done by the secretary.

We took the secretary's salary, developed a budget emcompassing few work hours for the secretary, with the money so saved going toward the purchase of a computer, and took it to the administrative body of the college that was in charge of purchasing. After several sessions, a decision was made to purchase the computer.

The decision was made after we were able to show that the computer would save the college approximately $300 per month, with a total pay-back time of a little over ten months. While the career planning to be done with our microcomputer was important, the pay-back period was determined through replacement of secretarial

duties and not through the career planning function that would eventually become the major function of the computer. We were, however, able to show that career planning with a microcomputer was possible and demonstrate a considerable savings by writing our own program, rather than purchasing a pre-packaged program.

After purchasing the microcomputer, my Dean and I sat down and developed the priority that would be followed in the development of the program. The remainder of this article follows the steps in developing those programs that were outlined by that early meeting, as well as some "side-trips" that happened as we began to realize the full potential of the computer.

The same procedures were followed with each program. First, the material was evaluated to see whether the computer could be used to any advantage. If the computer could be used, a mock version of the final printout was drawn up, with a flow chart of programming steps needed to produce that printout. After a flow chart was produced, the computer was programmed and then tested to make sure that the final printout agreed with the original projection. We then field tested each program, looked at the results, and made necessary program revisions. Some programs have required as many as six major revisions before the final product was satisfactory to all concerned.

One interesting thing that we discovered was that, as programming became more proficient, changes became necessary in order to feel that the full technical capability of the computer was being used, which tended to exasperate the office secretary, because as soon as one set of procedures was learned, they would have to be revised to be in order with the newly-learned programming techniques.

VACANCY-LISTING

The first area that was developed was a vacancy-listing system, since this office is responsible for the listing of teacher vacancies. The pace on this was frantic, because the amount of time from the purchase of the computer to the first listing was one month.

The first method for catagorizing and storing vacancies was crude, but today the computer uses random access data files with a capacity of 500 four-catagory vacancy listings per data disk. Each listing which comes to the office is coded-in by the office secretary, according to four two-digit codes. The computer uses these codes to search its files and print an individualized vacancy listing for each student. To date, the longest listing that we have used with our new system has been 200 vacancies, which required a total of about two hours to input the data for all vacancies, with the final printout taking about 45 seconds per student to process.

Later adaptations of this system include the use of a word processing program to type full-scale vacancy listings for each of the majors at Kansas Wesleyan.

CAREER PLANNING

As soon as a rough vacancy listing program was completed, work began on a computer-assisted career planning program. The first system that we used printed out an automatic listing in response to work activity/situation variables. In this situation,

the student had very little, if any, control over the final product and no way of challenging the computer's decision. It was judged by the people at Appalachia Educational Lab that such a system was unsatisfactory, since it allowed the machine to take away a part of the decision-making process.

The present format allows the student to challenge the computer's decision, have very direct control over what is being selected or rejected, and thereby reflect the form of the final printout. In terms of the final process, very little of the intermediate decision-making process is hidden from the student, and the end result is that the student receives a printout divided by his/her own choice into three areas: Worker trait groups that have been (1) rejected, (2) questioned, or (3) selected, and the groups which have been selected can be ranked for order of exploration through use of the "self-directed search."

COMPUTER-ASSISTED INSTRUCTION

The next area that we moved to was computer-assisted instruction for our careers class, using modules, which we called "stops." One advantage of the computer is that it is a tireless tutor; and when a student misses a point on the post test for any stop, the computer automatically returns him/her to the text material to reread the assignment. This is a definite advantage when dealing with those students whose reading ability is at a minimal level or those who are just "lazy" readers.

There are three instructional units written for the computer: (1) Introduction to Career planning, (2) Goal setting, and

(3) Introduction to the concept of worker trait groups.

LIBRARY ACCESS

We also had problems in getting the students to follow through on their printouts by narrowing down the worker trait groups and exploring them in the career library. It required two changes. The first change was to convert our career library to the worker trait (G.O.E.) number and move the files from a filing cabinet to three-ring binders on the shelf. The first part of this was due to the fact that we wanted the students to get examples of a large number of occupations that are possible within a worker trait group, rather than being led by a D.O.T. number to a specific occupation, thereby limiting exploration. The three-ring binders came about as we began to discover that the students were reluctant to open a filing cabinet to get materials. It seemed to have a sense of "forbidden territory" and the stigma of not opening teachers filing cabinets.

The next step was to write a program to help the student narrow the worker trait group possibilities for exploration. The students are asked a series of questions which correspond to the McKnight materials, receive a summary of their answers in the form of a bar graph, and are asked to prioritize different worker trait groups as the computer displays them in pairs.

As a last step to library access, we wrote a program which allows the student to use the computer and worker trait group numbers to access the library files. If a student wants copies of materials which he/she finds in the library, copies are made.

NON-COMPUTERIZED INSTRUCTION

The entire system interfaces with non-computerized career-related exercises, such as informational interviews and job-hunt exercises, and roughly one-half of our career planning course is based on non-computerized units.

FUTURE USES OF THE COMPUTER

During the Fall of 1981, we hope to begin using the computer to store and print vacancies on a larger scale; and to enhance the number of our vacancies, we are going to try and establish a network system with our alumni. The computer will be used to store the name of Alumni submitting vacancies, the vacancy they listed (including geographical location), and to keep a running total of the number of vacancies that each alumni has sent in.

We would also like to convert many of our office records to computer disk, with uses in the area of credentials files, finances, and employer relations heading the list. Since this office is in charge of cooperative education, we will be able to use the computer to give weekly summaries of each student's compliance with the requirements of the program.

The uses of the office computer have proven to us that it has been a very worthwhile investment. It produces a very satisfactory product in a much shorter time and does it in such a way that the work is easier and much more pleasurable.

Libraries -- school, public and college or university -- are ideal locations for housing career/occupational information or creating a "Career Information Center." Libraries by their very nature have several built-in advantages that make them preferred over counselor's offices or separate Career Information Centers. Many types of career/vocational information are readily available in any library; the library already is a fully functioning information center; libraries generally are open and accessable longer with more varied hours; and library personnel are accustomed to housing, arranging and using many types of materials. A community college library is a good central location for a Career Information Center to pull together materials that might be scattered among counselor and placement offices and within the library's general and reference collections.

A Career Information Center, such as the one at Southwest Virginia Community College, brings together many types of material and various expertise from among the staff. The CIC has the support of the Dean of Students, counselors, Placement Officer, teaching faculty of Career Exploration and Preparation for Employment as well as a number of the regular teaching faculty. The creation of the CIC was the brain child of a member of the Counseling staff and the Dean of Students. With the support of the Library staff, the CIC was located in the SVCC Library.

Once a CIC is established and functioning, the problems associated with it are common to any collection of information and are not necessarily limited to updating material, expanding the

variety of information, and weeding out older, out-of-date materials. Although at one time career information material was scarce, the challenge today is choosing from a wide selection of career and vocational materials. These materials range from free and inexpensive materials to the very expensive. No institution can buy everything nor afford the staff and space to catalog and store all the "free" materials available. The selection of materials, the allocation of funds among the great numbers of possible purchases determine whether a Career Information Center remains a vital, useful source of career/vocational information or just an impressive-looking collection of dust collectors.

The changing needs and expectations of today's information using public makes it almost imperative that Career Information Centers utilize a variety of types of media. The emphasis on instant access to information almost mandates a computer assisted approach to information seeking. Although standard print source materials may provide more complete and in-depth information, more is not necessarily better. A computer-based information source can provide immediate and concise information. It has the flexibility to proceed from the specific to the general and from the general to the specific. A computer can function to provide choices and avenues of approach that may not occur to a casual user faced with a multitude of print material. A well designed computer information source will facilitate the location of information for the informed user who knows exactly what he/she wants as well as leading the informed user into a personalized search based on the choices available.

A computer information source will not replace a trained counselor, librarian, or other professional in the career/vocation area; nor, will it replace authorative reference works and well-written, informative texts. These, the professional and the information, form the backbone of any information system. The computer can be a very simple yet complex communication alternative that can provide a cost effective means of information dispersal. Thus staff time is freed from the repetitive dispersal of readily accessable information.

The Library staff participation in this study was motivated by a commitment to the support of career/vocational education, meeting the challenge of meeting the information needs of SVCC students and faculty, and providing new and easier access to information. A computer seemed a viable and exciting alternative.

One spin-off from this study of computer application to career information is a joint venture by three county public libraries and the SVCC Library to provide career/vocational information and guidance to area adults. The target population includes re-entry women and those persons experiencing mid-life career change and continuing education needs. The county libraries will provide information through use of the COINS microfiche files and act as referral centers for local community agencies. The college staff will provide training for local library employees, and the Library will provide back-up reference and interlibrary loan service for any print information needed. Computer access will be available in each county library through the microcomputer on a scheduled basis.

The study has been beneficial to the SVCC Library in addition to its basic purpose of reviewing computer application because it has opened new lines of communication with area educators and library personnel. Many agencies will profit by new cooperation and sharing of resources.

GLOSSARY

AEL	Appalachian Educational Laboratory
CECIL	Computerized Educational and Career Information Link
COIN	Coordinated Occupational Information Network
CVIS	Computerized Vocational Information Systems
GIS	Guidance Information System
Micro-Computer	A "smaller sized" computer based on micro-processor "chips" which can provide services similar to full-sized computers, but are much lower in cost (usually less than $5,000 for a system. Memory capacity and speed are limited also.
SIGI	System of Interactive Guidance & Information

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